

What is claimed is:

1. A manufacturing method for a semiconductor device using a wire bonding method using a metal wire, wherein in said wire bonding method, an impact load applied when a metal ball formed at the tip of said metal wire by electric discharge is brought into contact with a terminal electrode of a semiconductor device is smaller than a static load applied after said metal ball is brought into contact with said terminal electrode.

5

10 2. The method for manufacturing a semiconductor device according to claim 1, wherein said metal ball is used for forming a bump.

15 3. The method for manufacturing a semiconductor device according to claim 1, wherein said metal wire is used for bonding the terminal electrode of the semiconductor device to an input/output terminal electrode of a circuit board.

20 4. The method for manufacturing a semiconductor device according to claim 1, wherein said terminal electrode is formed on an element or wiring provided inside said semiconductor device.

25 5. The method for manufacturing a semiconductor device according to claim 1, wherein an ultrasonic wave is applied at least after said static load is applied.

30 6. The method for manufacturing a semiconductor device according to claim 1, wherein the impact load per said metal ball is 0.441 N or less, the static load is 0.981 N or less and the pressure applied to said terminal electrode after said static load is applied is 140 MPa or less.

35 7. The method for manufacturing a semiconductor device according to claim 1, wherein the difference between the impact load per said metal ball and said static load is 0.736 N or less.

8. The method for manufacturing a semiconductor device according to claim 1, wherein said metal ball is formed of at least one metallic material

selected from the group consisting of Au, Al, Pd, Pb, Sn, Cu, In, Bi, Ti and Ni.

9. A method for mounting a semiconductor device, comprising mounting a circuit board provided with a bump on an input/output terminal electrode to a semiconductor device by bonding the tip of said bump to said terminal electrode of said semiconductor device, wherein an impact load applied when said bump is brought into contact with said semiconductor device is smaller than a static load applied after said bump is brought into contact with said terminal electrode.

10

10. The method for mounting a semiconductor device according to claim 9, wherein the tip of said bump has a needle shape.

11. The method for mounting a semiconductor device according to claim 10, wherein said needle-shaped portion comprises a flat portion having a diameter of $40 \mu m$ or less.

12. The method for mounting a semiconductor device according to claim 9, wherein the tip of said bump has a spherical shape.

13. The method for mounting a semiconductor device according to claim 9, wherein the terminal electrode of said semiconductor device is formed on the element or the wiring provided inside said semiconductor device.

14. The method for mounting a semiconductor device according to claim 9, wherein an ultrasonic wave is applied at least after said static load is applied.

15. The method for mounting a semiconductor device according to claim 9, wherein the impact load per said bump is 0.441 N or less, the static load is 0.981 N or less, the pressure applied to said terminal electrode after said static load is applied is 140 MPa or less.

16. The method for mounting a semiconductor device according to claim 9, wherein the difference between the impact load per said bump and said static load is 0.736 N or less.

17. The method for mounting a semiconductor device according to claim 9, wherein said bump is formed by a wire bonding method and formed of at least one metallic material selected from the group consisting of Au, Al, Pd, Pb, Sn, Cu, In, Bi, Ti and Ni.

5

18. The method for mounting a semiconductor device according to claim 9, wherein said bump is formed by plating and formed of at least one metallic material selected from the group consisting of Au, Al, Pd, Cu, Ni, Ti, Cr and Ag.

10

19. The method for mounting semiconductor electrode according to claim 9, wherein said bump is formed by a printing method and formed of at least one metallic material selected from the group consisting of Ag, Pd, Pt, Cu, Ni, Pb, Sn and Bi.

15

20. A method for inspecting a semiconductor device used for a method for manufacturing a semiconductor device by a wire bonding method using metal wire, wherein a probe needle for inspection is brought into contact with a region on said terminal electrode other than a region in which the metal ball formed at the tip of said metal wire by electric discharge is bonded to said terminal electrode among regions on the terminal electrode of the semiconductor device.

20

21. The method for inspecting a semiconductor device according to claim 20, wherein said terminal electrode is formed on the element or the wiring provided inside said semiconductor device.

30

22. A semiconductor device manufactured by a wire bonding method using a metal wire, comprising a region with which a probe needle for inspection is brought into contact in addition to a region in which the metal ball formed at the tip of said metal wire by electric discharge is bonded to said terminal electrode formed on the semiconductor device.

35

23. The semiconductor device according to claim 22, wherein said terminal electrode is formed on the element or the wiring inside said semiconductor device.